43. The gene according to claim 5, wherein the part of the nucleotide sequence comprises the nucleotide sequence as set forth in SEQ ID NO: 22.

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44. The gene according to claim 6, wherein the part of the nucleotide sequence comprises a nucleotide sequence encoding the amino acid sequence as set forth in SEQ ID NO: 21.

45. The gene according to claim 6, wherein the part of the nucleotide sequence comprises the nucleotide sequence as set forth in SEQ ID NO: 22.--

REMARKS

Entry of the foregoing, reexamination and further and favorable reconsideration of the subject application in light of the following remarks, pursuant to and consistent with 37 C.F.R. § 1.112, are respectfully requested.

Claim 1 has been amended to delete reference to "or a derivative thereof having said enzymatic activity". Claim 4 has been amended to clarify that the modified amino acid sequence retains aromatic acyl group transfer activity. Claim 24 has been amended to depend from an elected claim. Support for this amendment to claim 24 may be found in claim 24 as originally filed. New claims 28-45 have been added. Support for new claim 28 may be found, at the very least, at page 6, line 32, to page 7, line 13, and in original claims 5 and 6. Support for new claims 29-32 may be found, at the very least, in original

claims 9-12. Support for new claim 33 may be found, at the very least, in original claim 20. Support for new claims 34 and 35 may be found, at the very least, in original claims 22 and 23. Support for new claims 36-38 may be found, at the very least, in original claims 25-27. Support for new claims 39-41 may be found, at the very least, in original claim 24. Support for new claims 42-45 may be found, at the very least, at page 34, lines 25-34, of the specification. No new matter has been added by the present amendment.

Claim 24 has been objected to for depending from a non-elected claim. Claim 24 has been amended to depend from elected claim 20, rendering this objection moot.

Claims 1-12, 20 and 22-27 have been rejected under 35 U.S.C. § 112, first paragraph, for purportedly not containing a written description of the claimed invention. Specifically, the Examiner purports that the specification does not provide adequate written description support for every gene encoding a protein having aromatic acyl group transfer activity, or a derivative thereof having said enzymatic activity. According to the Examiner, the specification does not describe identifying characteristics, such as sequence or properties of the gene/proteins, for an adequate number of representative species. For at least all of the reasons stated below, withdrawal of this rejection is respectfully requested.

The applicants have cloned many cDNA's which encode an enzyme having an aromatic acyl group transfer activity, and the specification describes the cDNA's which have been cloned. For example, in Example 6 the applicants describe cDNA or gentian origin; in Example 8, cDNA of petunia origin is disclosed; and in Example 20, cDNA of

lavender origin is disclosed. The cDNA's disclosed in Examples 6, 8 and 20 were obtained using a hybridization method (described in the specification) to select desired cDNA. Example 11 describes a cDNA of perilla origin and Example 12 describes a cDNA of cineraria origin. The cDNA's of both Examples 11 and 12 were obtained by using synthetic DNA primers.

One of skill in the art could obtain a protein having an aromatic acyl group transfer activity of any origin using the methods described in Examples 6, 8, 11, 12 and 20. Example 3(6) teaches the probe which is used in Examples 6 and 8 to obtain a protein with aromatic acyl group transfer activity. Example 20 uses the same hybridization method as that taught in Example 3, but with a different flower species (i.e., *lavandula angustifolia* as opposed to *petunia hygrida* or *gentian*).

In Example 11, the applicants compared amino acid sequences from the proteins obtained in Examples 3, 6 and 8, and determined that a amino acid sequence was conserved between these proteins. They used this sequence to produce a primer which will amplify aromatic acyl transfer genes. The applicants next used this primer to amplify DNA from a cDNA library developed from perillas, and obtained a protein with aromatic acyl group transfer activity. In Example 12, the primer was also used to screen for genes in *Senecio cruentus*. Thus, the applicants have shown that this protein has a conserved region which is found in all of the flower species discussed in the specification, and primers from this conserved region can be used to isolate proteins from other flower species. A specification may, within the meaning of 35 U.S.C. §112, 1st para., contain a

written description of a broadly claimed invention without describing all species. Utter v. Hiraga, 6 USPQ2d 1709, 1714 (Fed. Cir. 1988). Applicants have adequately described how one of skilled in the art would obtain a protein having aromatic acyl transferase activity, and have even disclosed numerous proteins, from various species, which they have isolated using their methods. Applicants do not need to provide sequence information for every protein which has aromatic acyl transferase activity in order to comply with the written description requirement of 35 U.S.C. § 112, first paragraph. Teaching how one of skilled in the art could obtain such proteins is enough to fulfill the written description requirement. Thus, the application provides written description support for the subject matter claimed.

In light of these remarks, applicants respectfully request withdrawal of this rejection under 35 U.S.C. § 112, first paragraph.

Claims 1-12, 20 and 22-27 have also been rejected under 35 U.S.C. § 112, first paragraph, for purportedly not being enabled for all genes encoding all proteins which have aromatic acyl group transfer activity. For at least all of the reasons provided below, applicants believe withdrawal of this rejection is in order.

As discussed in more detail above, the applicants teach how one of skilled in the art could obtain proteins which have aromatic acyl group transfer activity. By comparing a number of these proteins, the applicants determined that there is a conserved region between the various proteins (from various floral species). They have developed nucleic acid primers from this conserved region and have successfully isolated proteins from other

species using the primers to amplify the gene. It is encumbent upon the Patent Office to explain why it doubts the truth or accuracy of any statement in the disclosure and to provide evidence or reasoning to back up its assertions. *In re Marzocchi*, 439 F.2d 220, 224 (CCPA 1971). The Examiner has not indicated why he doubts that one of skill in the art could not obtain every protein which has aromatic acyl group transfer activity using the methods clearly set forth in the specification. Thus, the Examiner has not met his burden in establishing that the claims are not enabled by the specification.

In light of these remarks, applicants respectfully request withdrawal of this rejection under 35 U.S.C. § 112, first paragraph.

Claims 1, 4, 6, 7, 8 and 25 have been rejected under 35 U.S.C. § 112, second paragraph, for purportedly being indefinite. For at least all of the reasons set forth below, withdrawal of this rejection is in order.

Claim 1 has been rejected for the use of the word "derivative" which purportedly renders this claim vague and indefinite. Claim 1 has been amended to delete recitation of "or a derivative thereof having said enzymatic activity" rendering this rejection moot.

Claim 4 has been rejected for the use of the words "modified", "addition or removal of one or more amino acids", and "substitution", which purportedly render this claim vague and indefinite. It is well known in the art that modification or substitution of one or a few amino acid residues in an enzyme maintains the enzyme activity of the native enzyme. It would be within the skill of one in the art to determine which of the amino acid residues in the enzyme claimed can be removed, what amino acid residues can be added, or

which amino acid residues can be substituted, without effecting the activity of this enzyme. In order to clarify the claim, claim 4 has been amended to state that the modified amino acid sequence retains its aromatic acyl group transfer activity. In light of these remarks, and the amendment to claim 4, withdrawal of this rejection is believed to be in order.

Claim 6 has been rejected for the recitation of "with part" which purportedly renders the claim vague and indefinite. As can be seen on page 34 of the specification, lines 25-34, the amino acid sequence Asp-Phe-Gly-Trp-Gly-Lys was found to be common between the sequences identified by SEQ ID Nos:1-6. Therefore, it is clear this conserved part of SEQ ID Nos:1-6 can be used as a probe for selecting DNA coding for the desired enzyme. It is well established that claims are not to be read in a vacuum, and limitations therein are to be interpreted in light of the specification in giving them their broadest reasonable interpretation. In Re Marosi, 218 USPQ 289, 292 (Fed. Cir. 1983). In re Sneed & Young, 218, USPQ 385, 388 (Fed. Cir. 1983). The specification teaches one of skill in the art which "parts" of SEQ ID Nos:1-6 can be used to hybridize to and isolate genes which have aromatic acyl group transfer activity. Since the term "parts" in claim 6 is defined in the specification, and the claims are to be read in light of the specification, claim 6 is not vague or indefinite. Thus, withdrawal of this rejection is believed to be in order.

Claims 7 and 25 have been rejected for being vague in their recitation of "having". Claim 7 has been amended to clarify that the amino acid sequence is at least 15% homologous to any one of the amino acid sequences of SEQ ID No. 1 to 6. Claim 25 has

been amended to clarify that the progeny of the plant whose color has been controlled also has its color controlled. In light of these amendments, withdrawal of this rejection is respectfully requested.

Claims 7 and 8 have been rejected for being vague in the recitation of "homology of at least . . ." In, for example, Example 6 on page 28, the applicants determined homology of the amino acid sequence deduced from the cDNA isolated by comparing the sequence to the entire region of the amino acid sequence of a known aromatic acyl group transfer enzyme. Thus, "homology" is defined in the specification. As stated above, claims are to be read in light of the specification. Since "homology" is defined in the specification, claims 7 and 8 are note vague, and withdrawal of this rejection is requested.

Claims 1-8 have been rejected under 35 U.S.C. § 102(b) for purportedly being anticipated by Ishizaki et al. For at least all of the reasons set forth below, withdrawal of this rejection is in order.

Ishizaki et al discloses an a cDNA which encodes the glycerol-3-phosphate acyltransferase enzyme from squash. This enzyme transfers an acyl group of a fatty acid (glycerol-3-phosphate).

Ishizaki et al does not disclose or suggest the enzyme of the claimed invention. The claimed invention involves an enzyme which transfers an acyl group of an aromatic acid (see page 2, lines 27-37 of the specification). Thus, the enzyme has aromatic acyl group transfer activity. Ishizaki et al does not disclose or suggest an enzyme which has aromatic

acyl group transfer activity. Thus, Ishizaki et al does not disclose or suggest the enzyme of the present invention.

In light of these remarks, withdrawal of this rejection under 35 U.S.C. § 102(b) is respectfully requested.

Claims 1-12, 20 and 22-27 have been rejected under 35 U.S.C. § 103(a) for purportedly being unpatentable over Ishizaki et al in view of Heidmann et al, Matern et al and Kamsteeg et al. For at least all of the reasons set forth below, withdrawal of this rejection is in order.

As discussed above, Ishizaki et al discloses an a cDNA which encodes an enzyme which transfers an acyl group of a fatty acid (glycerol-3-phosphate). Ishizaki et al does not disclose or suggest an enzyme which has aromatic acyl group transfer activity, which is the claimed invention.

Heidmann et al disclose a petunia flower color generated by transforming a petunia mutant (which has no glower pigmentation) with the A1 gene of Zea mays.

Matern et al disclose malonyltransferases isolated from parsley which are flavonoid-specific.

Kamsteeg et al teach an enzyme which transfers the *p*-coumaroyl or caffeoyl moiety of, respectively, *p*-coumaroyl-CoA and caffeoyl-CoA to the 4-hydroxyl group of the rhamnosyl moiety of anthocyanidin 3-rhamnosyl(1-6)glycosides and 3-rhamosyl(1-6)glucoside-5-glucosides.

None of the secondary references solve the deficiencies of Ishizaki et al. Specifically, none of the cited secondary references disclose or suggest an enzyme which has aromatic acyl group transfer activity, which is the claimed invention. Thus, the Examiner has not established a *prima facie* case of obviousness since none of the references, either alone or in combination with one another, disclose or suggest the claimed invention.

In light of these remarks, applicants respectfully request withdrawal of this rejection under 35 U.S.C. § 103(a).

From the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order and such action is earnestly solicited.

In the event that there are any questions relating to this application, it would be appreciated if the Examiner would telephone the undersigned concerning such questions so that prosecution of this application may be expedited.

Respectfully submitted,

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